

International Opportunities To Work With The U.S. Air Force Research Laboratory

June 2004



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Air Force Research Laboratory



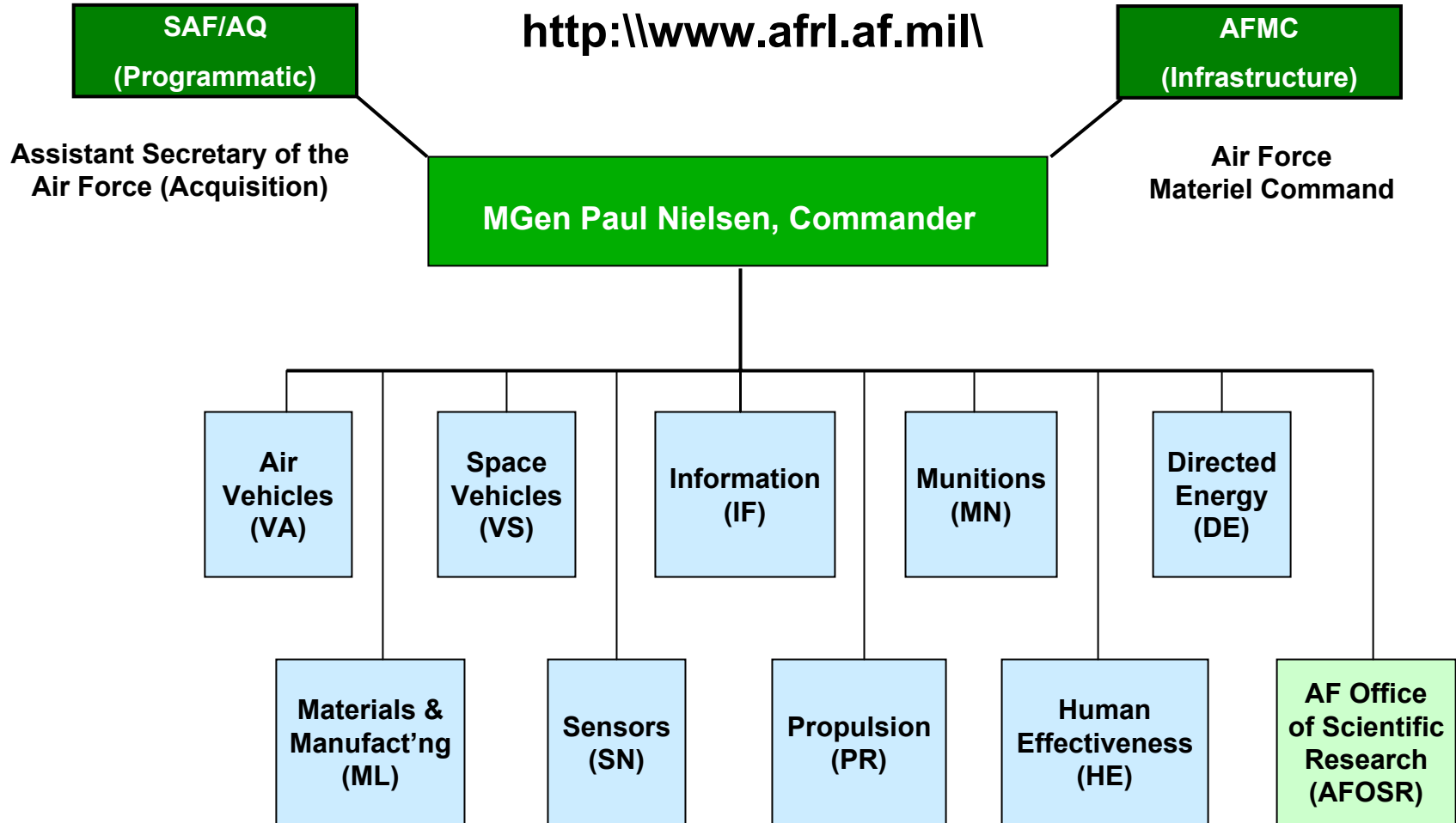
***From many
labs and
staffs...***



***...To the Air Force's
Single Laboratory***

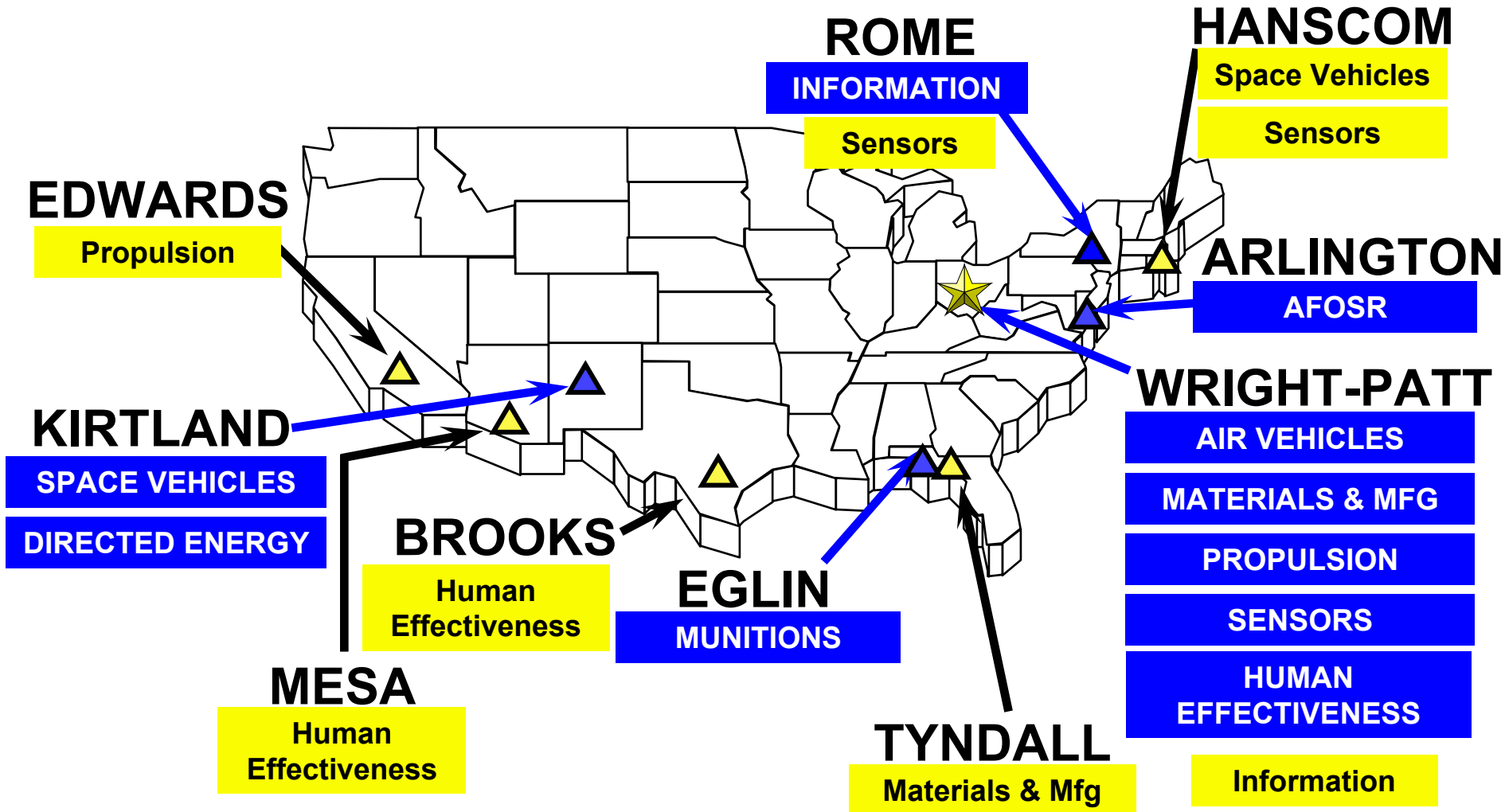


Air Force Research Laboratory



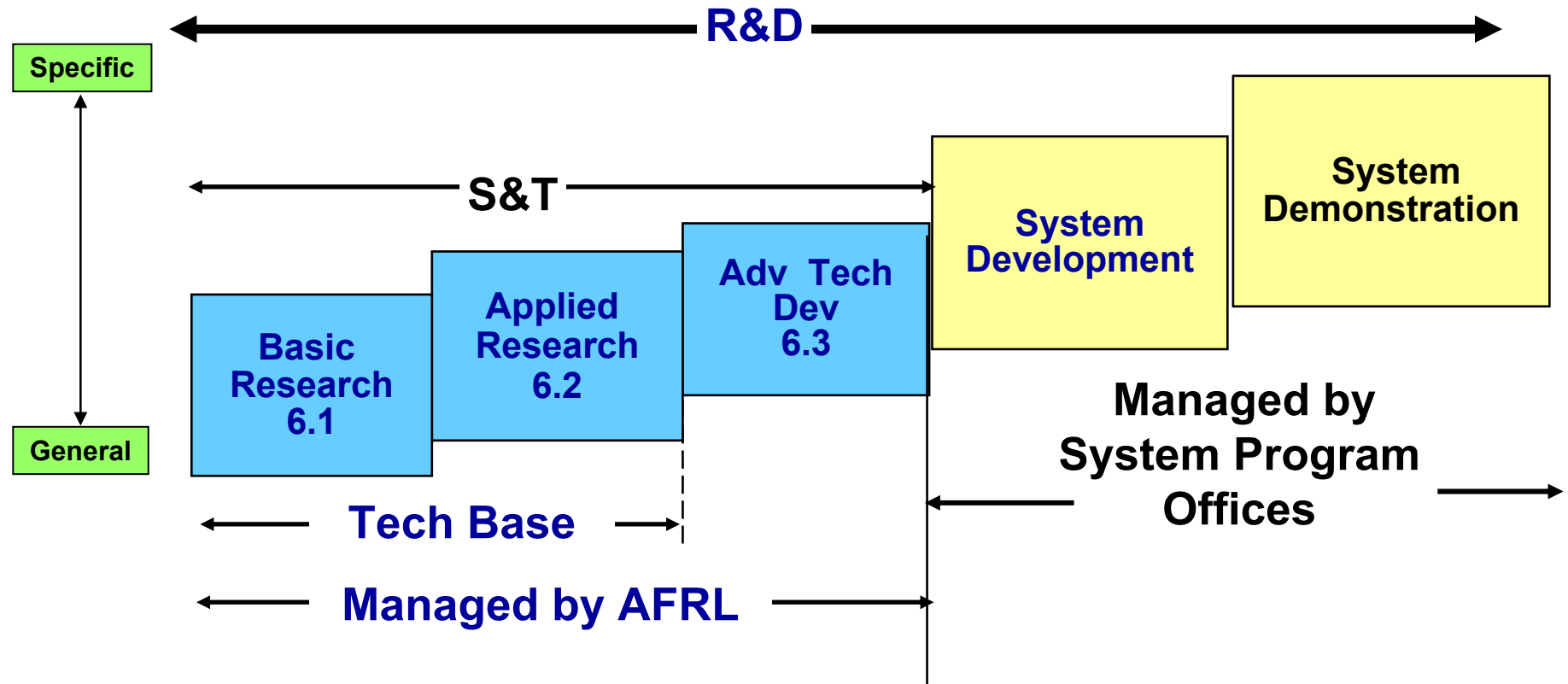


AFRL Research Sites





Science & Technology Program Structure

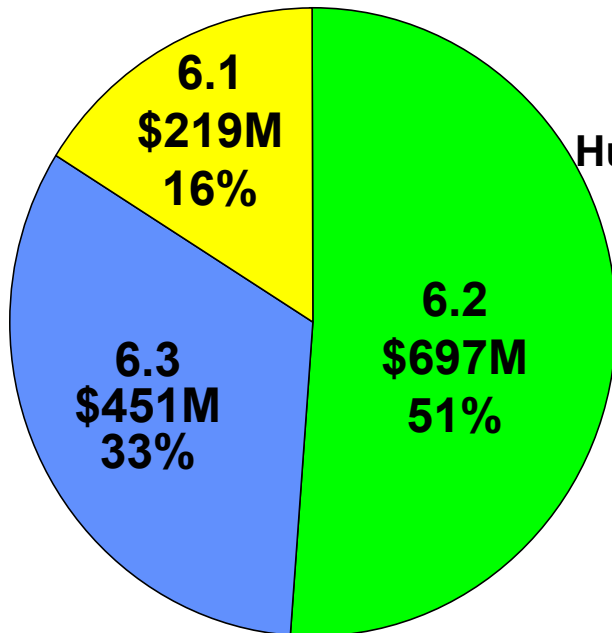




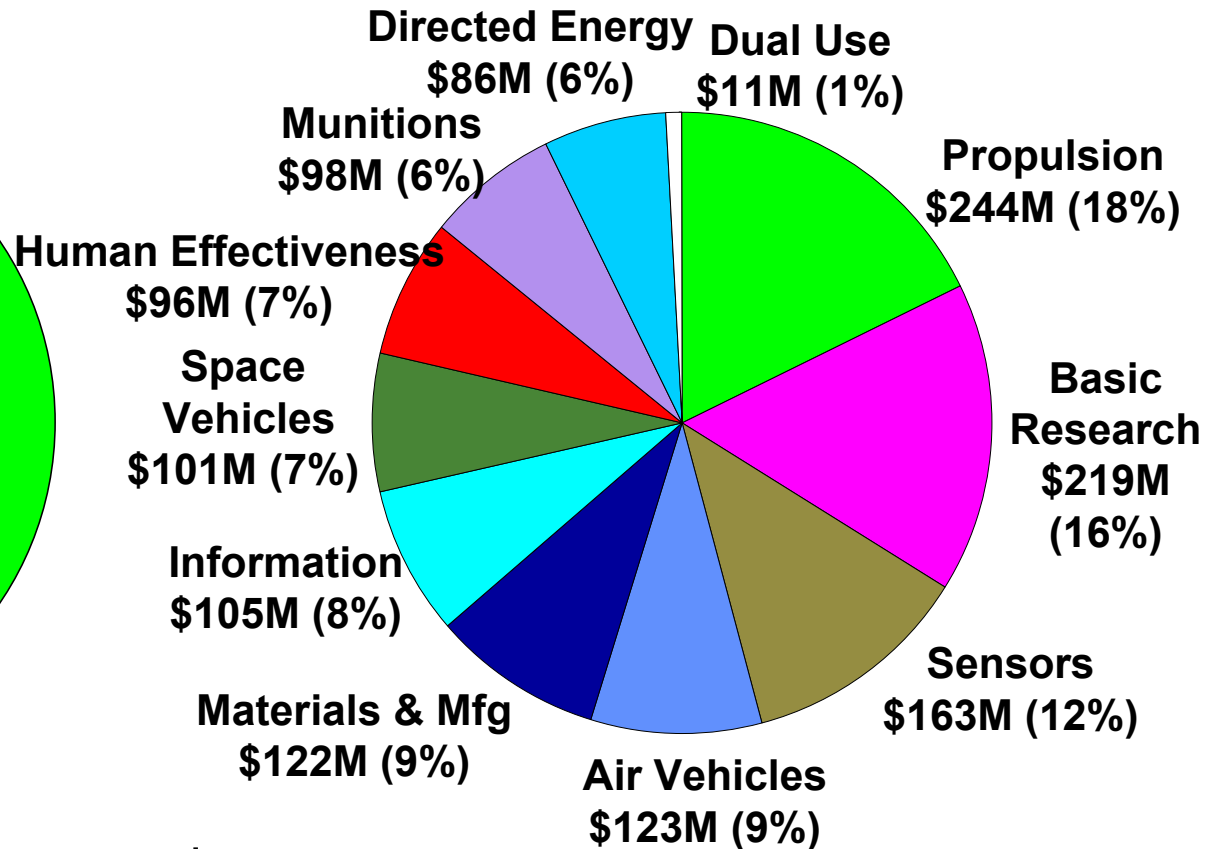
FY03 AF S&T Budget



**By
Budget Activity**



**By
Directorate/Tech Area**



TOTAL: \$1.367 Billion

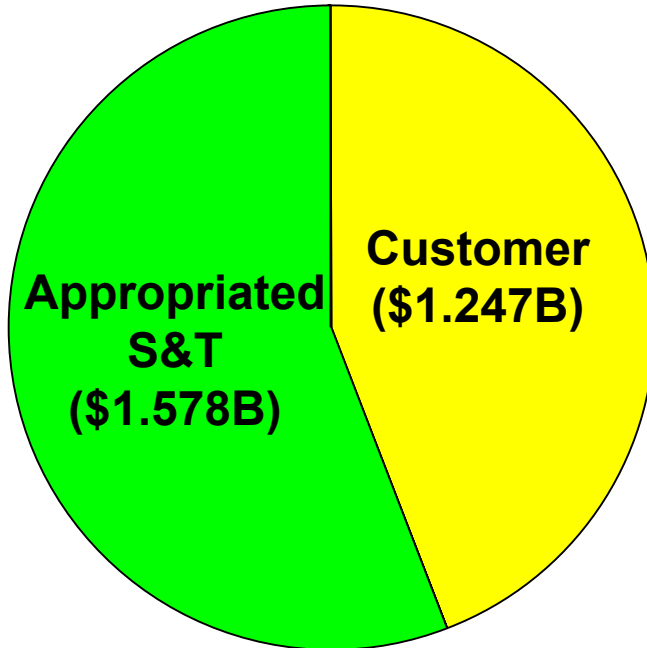
Values May Not Add Due to Rounding



S&T Resource Distribution (FY02)

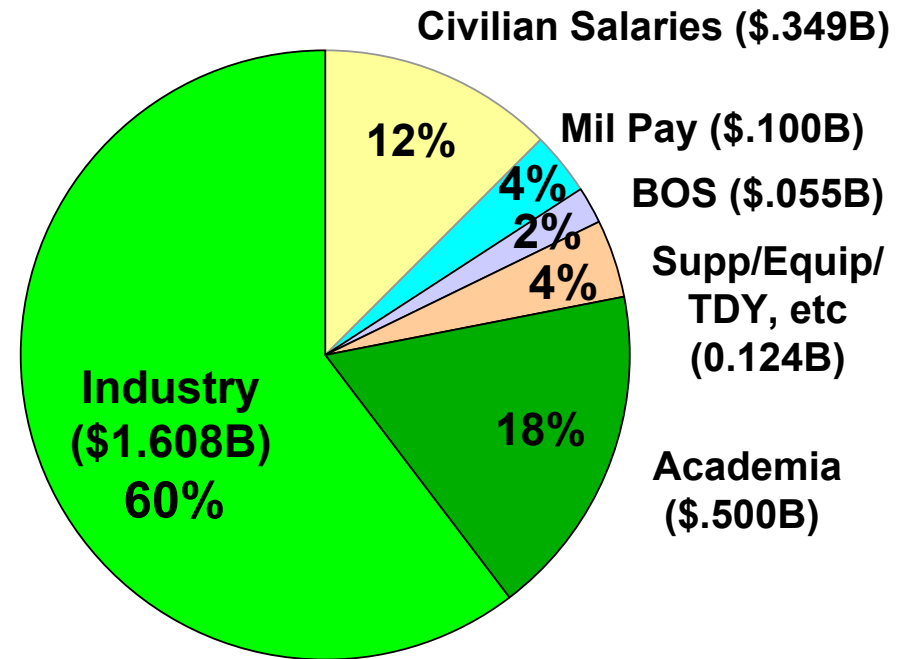


Revenue



\$2.825 Billion

Revenue Disposition



\$2.825 Billion



Operating Tenets



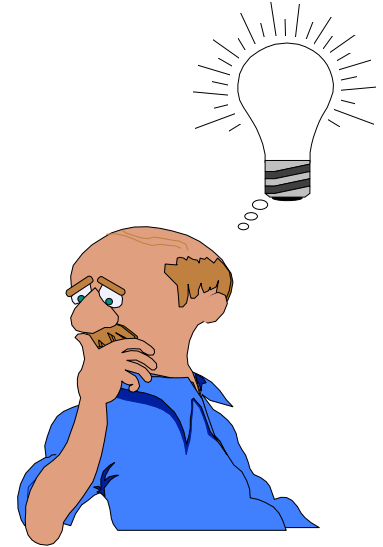
- **Outsource Majority of Research/Tech Development to Industry and Academia**
- **Perform Focused In-house Research to Maintain Core Expertise and Be a Smart Outsourcer**
- **Balance Near Term Transfer and Far Term Research**
- **Collaborate/Coordinate With Others**
 - **DOD: Army, Navy, DARPA, DTRA, MDA, NRO**
 - **Other Federal Agencies: NASA, DOE, Others**
 - **Private Sector**
 - ***International***



Why Do We Pursue International Cooperation?



- **Intellectual Stimulus**
 - *New Ideas, Different Approaches*
- **Leverage Partner Investments**
 - *Optimize Available Resources*
- **Improve Coalition Warfare Capabilities**
 - *Interoperability Begins with Technology-based Knowledge*
- **Mandated By Leadership**
 - *All Elements of DoD Explore Cooperative Programs with Allied Nations Before Undertaking New Programs*

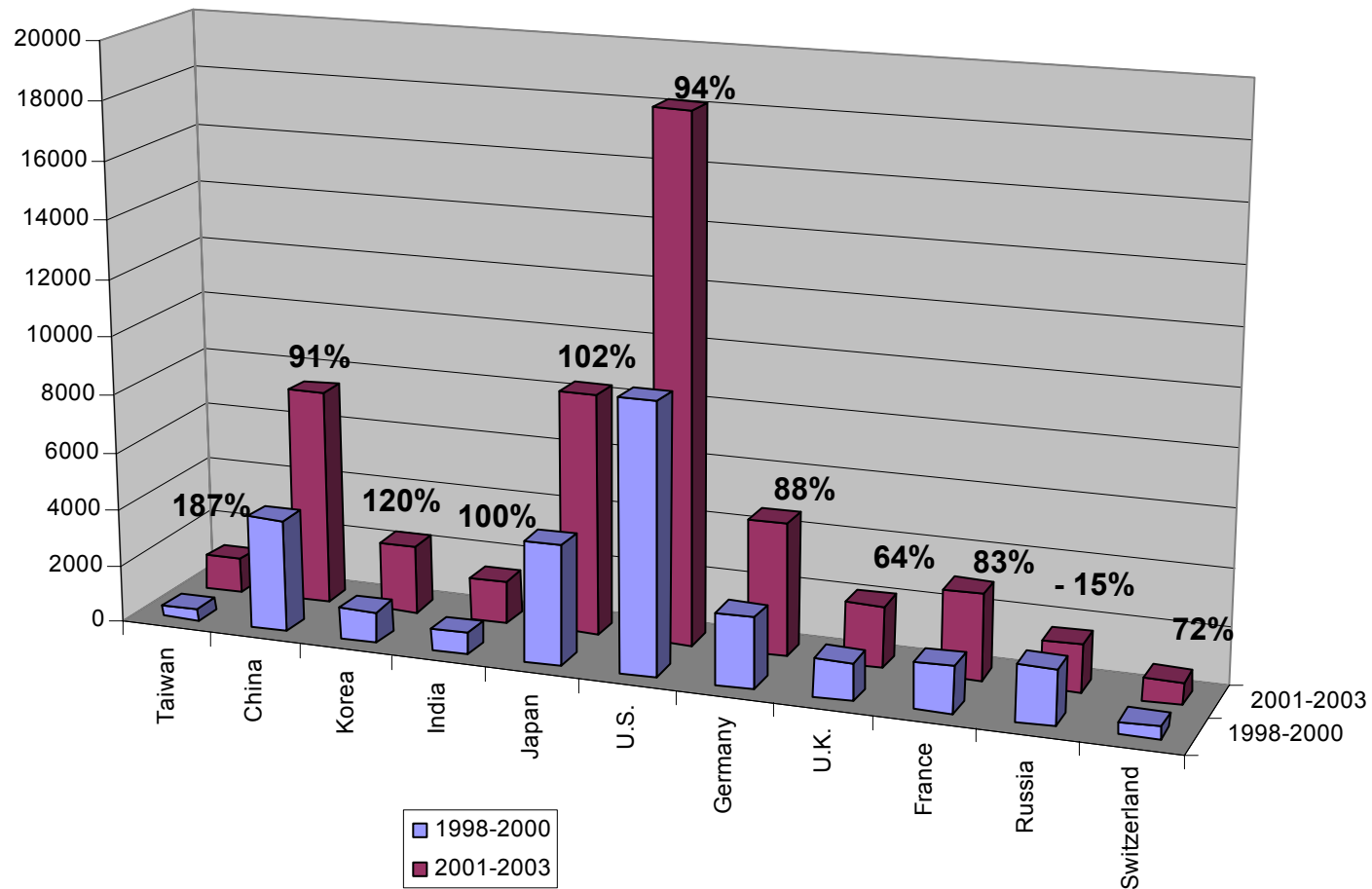




International S&T Activity in Evolving Technologies



- Increases of 91-187% in the last three years are seen in Asia for activity related to nanotechnology; gains in Europe are smaller; gains in U.S. are comparable





When Do We Pursue International Cooperation?



- **Air Force Pursues International S&T Opportunities When:**
 - **The Potential Return on Investment is High**
 - **The Researcher Has Unique Capabilities**
 - **The Establishment Has Unique Research Facilities**
 - **It is a Cooperative Quid-Pro-Quo Exchange Toward Common Goals**

***S&T Merit Outweighs
“Big Picture” Considerations***



How Do We Pursue International Cooperation?

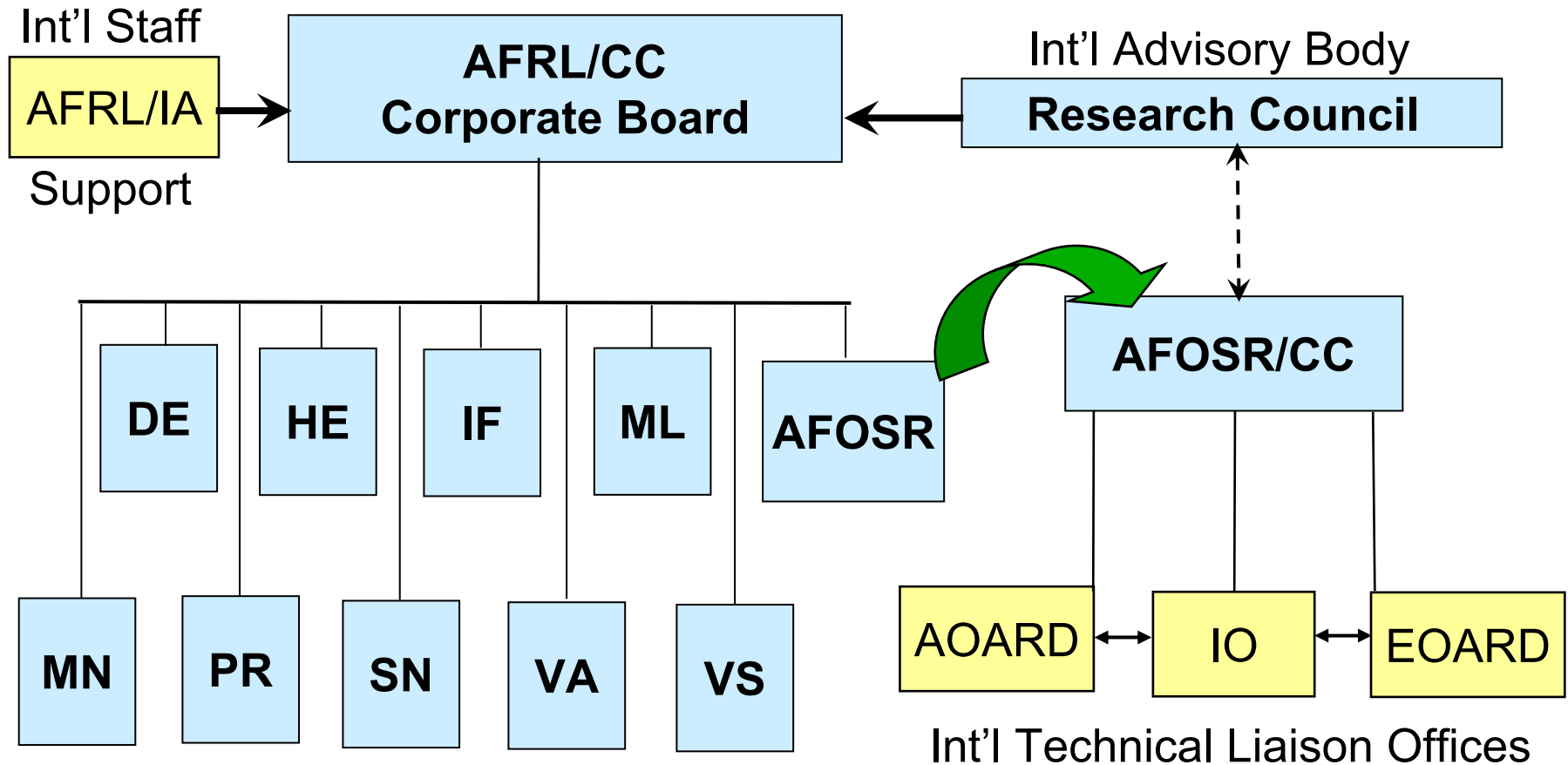


- International S&T Opportunities Are Discovered and Mined by:
 - The Air Force Research Laboratory Organization & Structure
 - Scientist-to-Scientist Interactions
 - *Public Domain*
 - *Govt-to-Govt Fora*
 - *Govt-to-Govt S&T Agreements*
 - Specific International Programs





AFRL International Enterprise Organization and Structure



All AFRL S&Es Are International Talent Scouts



Scientist-to-Scientist Interaction in S&T Country-to-Country Fora

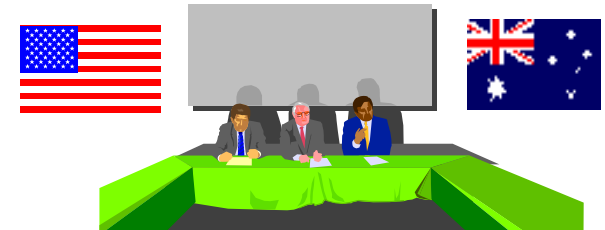


- **Bi-Lateral Fora**

- **AFRL:** *Australia, Canada, France, Israel, Singapore, Sweden, UK*
- **SAF:** *Brazil, Germany, Japan, ...*
- **OSD:** *Argentina, India, Singapore, ...*
- **DoS:** *China, S. Korea, Vietnam...*

- **Multi-Lateral Fora**

- **SICOFAA S&T Subcommittee**
 - *18 Countries in the Americas*
- **NATO Research and Technology Organization (RTO)**
 - *6 Panels & 1 Group, 187 Current Activities*
 - ***Largest Turkish Activity with AFRL***
- **The Technology Cooperation Program (TTCP)**
 - *10 Groups, 53 Technical Panels, 26 Action Groups*

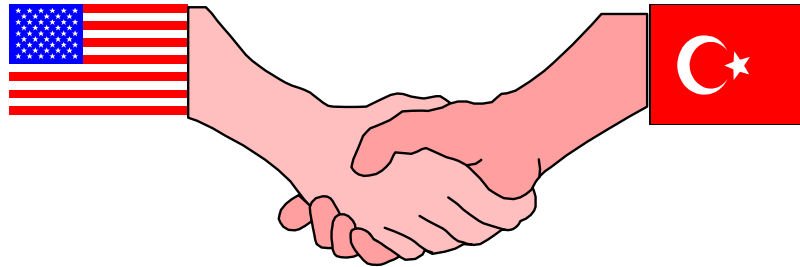




Government-to-Government S&T Agreements (*Active in FY03*)



- Data/Information Exchange Agreements - **40**
- Loan Agreements - **2**
- Long-Term Technology Program - **12**
- Collaborative Project Agreements – **58 (\$19M)**
- Engineer and Scientist Exchange Program (**15 Countries**)



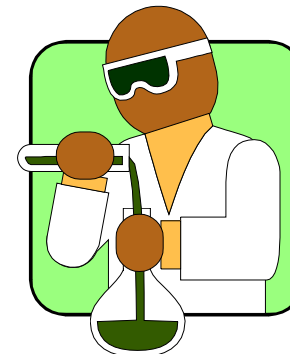
- ***Turkey Has 13 Agreements with USAF***
- ***Turkey Has Master DEA, but No Specific DEAs with AFRL***



International Programs



- **Windows Programs**
- **Conference Support Program**
- **Research Projects Contracts and Grants**
- **Engineer and Scientist Exchange Program**
- **National Research Council (NRC) Resident Research Associateships**





Window Programs

- **Window-on-Science (WOS)**
 - “Flagship” Program—Brings Top International Scientists to Present Their Research in the U.S. or at International Conferences
 - Easy to Nominate – AFOSR Pays Expenses
 - *326 WOS Visits From 29 Countries in FY03*
 - *5 From Turkey Since 1993*
- **Window-on-Europe (WOE), Asia (WOA), and Canada, Central and South America (WOCCSA)**
 - **AFRL Personnel Perform Research at a Non-Government International Institute**
 - *6 AFRL Participants in 2003*





Conference Support Program



- Promotes Conferences and Workshops Overseas
 - Focused on topics of interest to the DoD
 - Facilitates attendance/access by U.S. researchers
 - Venue to Discover Window-on-Science Candidates
- Often Done Jointly With U.S. Navy and/or U.S. Army
- Typically <\$5000 for Conference
 - *127 Conferences in 32 Countries During FY03*
 - *12 in Turkey Since 1993*

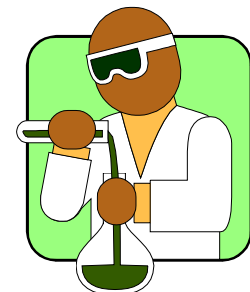




Research Projects Contracts and Grants



- Funds Research at International Universities, Institutes, and Government Labs
- Proposals in Response to AFOSR Broad Agency Announcement at <http://www.afosr.af.mil/>
 - “Seed” Contracts Typically 1 year/\$25,000
 - Successful Efforts May Lead to Larger, Multi-Year Projects
 - *AOARD/EOARD Started 140 Research Efforts With 31 Countries in FY03*
 - *AFOSR Funded \$8.3M in Overseas Basic Research During FY03*
 - *5 Contracts in Turkey Since 1994*

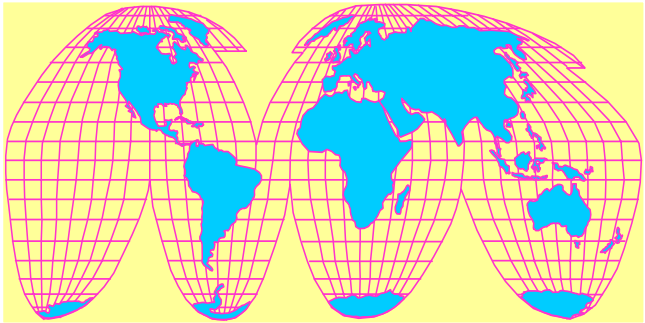




Engineer and Scientist Exchange Program (ESEP)



- **Established Dec 63
With Germany**
- **Home Country Pays
Costs**



- **5 In Negotiation:**
Brazil
Czech Republic
Italy
Poland
Singapore

15 Current Participating Countries

AF Abroad (9)

AF Hosting (19)

2 - Australia - 1

Canada

Egypt

1 - France - 1

3 - Germany - 12

Greece

Israel

Japan

Korea - 3

1 - The Netherlands - 1

Norway

Portugal

Spain

1 - Sweden - 1

1 - United Kingdom



NRC Resident Research Associateships



- Program for Post-Doctoral and Senior Scientists managed by the National Research Council
- Foreign nationals (w/o green cards) are accepted to the program!
 - AFOSR Pays for Foreign National Senior Scientists
 - Directorates May Pay for Foreign National Post-Docs
 - *37 Current AFRL Participants*
 - *5 Foreign Nationals (3 are Permanent Residents)*
 - *The Last Turkish National was a US Permanent Resident Who Spent 3 Years at AFRL/ML and Departed in November 2003*

<http://www4.nationalacademies.org/pga/rap.nsf>



Summary



- **Creativity and Expertise Found Worldwide**
- **Air Force Actively Seeks International Opportunities To Significantly Leverage and Enhance S&T Program**
- **Opportunities Pursued Through Government to Government Agreements, Fora, and the Public Domain**
- **International Activities Fosters Connectivity with International Researchers**

<http://www.afrl.af.mil/>